

Interactive comment on “GlobSim (v1.0): Deriving meteorological time series for point locations from multiple global reanalyses” by Bin Cao et al.

Anonymous Referee #2

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Reviews for “GlobSim (v1.0): Deriving meteorological time series for point locations from multiple global reanalyses” by Cao et al.

This study develops, describes and validates the GlobSim, which aims to downscale the gridded reanalysis atmosphere data to a single point scale, in order to drive models for single simulation research. Single simulation is generally important, e.g., for development of model and research on mechanisms. But usually forcing data is scarce, particularly in high mountain or high latitude regions, resulting in that many simulation experiments can not be carried out in these regions. This study attempts to better use the reanalysis data to solve this issue. The topic is important. The study also contains large amount of work, well writing and clear organization. Generally, it has a potential for publication. I have several comments that is considered to improve the paper

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1. My main concern is the validation. The paper develops the GlobSim that aims to output the better atmosphere forcing data. So, first, the output results (atmosphere data) should be validated to see whether the better atmosphere forcing data are produced. Then they can be used to forcing model and some validations are further performed to see whether simulated results are better, which in turn also have a strong demonstration of the better forcing data. Now, the study directly validated the simulated results. As we known, simulation performances are determined by both forcing data and models. In this case, better simulation performance may be caused by model rather than forcing data, and so not reaching the main target that forcing data are actually needed to be validated.

2. I also suggest that this study used the direct atmospheric forcing data in site-matched grid's reanalysis data (i.e., value in a simulation grid) to carry out a reference experiment, and then to compare with GlobSim results (single point) forced results. This comparison can really demonstrate the advantage of GlobSim.

3. Page4, Line2, a newer literature (Estimates of global surface hydrology and heat fluxes from the Community Land Model (CLM4.5) with four atmospheric forcing datasets. Journal of Hydrometeorology. 2016, 17, 2493-2510) is suitable for this discussion.

4. Table 2, the resolution of JRA-55 should be 1.125 rather than 0.56.

5. Page15, L11, remove the “.”

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